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EXAMINER	
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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/560,244
Filing Date: December 12, 2005
Appellants: KASHIHARA ET AL.

Nataliya Dvorson

For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 9/27/2010 appealing from the Office action mailed 4/28/2010.

(1) Real Party in Interest

The examiner has no comment on the statement, or lack of statement, identifying by name the real party in interest in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The following is a list of claims that are rejected and pending in the application: 1, 4-6, 10, and 13-16.

(4) Status of Amendments After Final

The examiner has no comment on the appellant's statement of the status of amendments after final rejection contained in the brief.

(5) Summary of Claimed Subject Matter

The examiner has no comment on the summary of claimed subject matter contained in the brief.

(6) Grounds of Rejection to be Reviewed on Appeal

The examiner has no comment on the appellant's statement of the grounds of rejection to be reviewed on appeal. Every ground of rejection set forth in the Office action from which the appeal is taken (as modified by any advisory actions) is being

maintained by the examiner except for the grounds of rejection (if any) listed under the subheading "WITHDRAWN REJECTIONS." New grounds of rejection (if any) are provided under the subheading "NEW GROUNDS OF REJECTION."

(7) Claims Appendix

The examiner has no comment on the copy of the appealed claims contained in the Appendix to the appellant's brief.

(8) Evidence Relied Upon

Publication Number	Inventor Name	Publication Date
20020043886	Fujita et al.	4/2002
20030015932	Oohashi et al.	1/2003
6018205	Oohashi et al.	1/2000
6281612	Asao et al.	8/2001
20020096958	Oohashi et al.	7/2002
5587619	Yumiyama et al.	12/1996
6417585	Oohashi et al.	7/2002

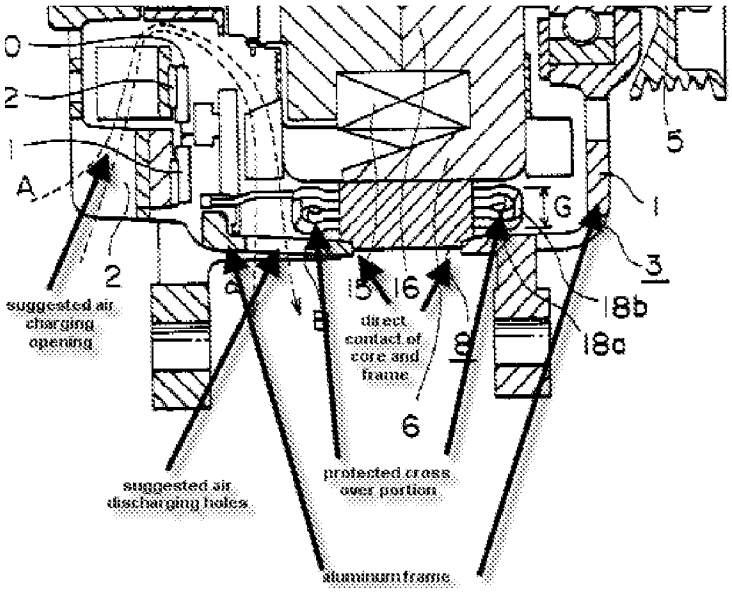
(9) Grounds of Rejection

The following grounds of rejection are applicable to the appealed claims:

1. Claims 1, 4, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fujita et al. (Fujita)(US 2002/0043886) and Oohashi et al. (Oohashi)(US 2003/0015932) and Oohashi et al. (Oohashi '205)(US 6018205). Fujita teaches a generator for a vehicle having a rotor 6 with a field windings 15, a stator including a stator core 17 arranged opposed to the rotor and an electrical conductor wound 18 on

the stator core, and a housing 3 supporting the rotor and the stator. Fujita teaches the stator core 17 is constituted by core having a plurality of slots (see figure 3) each extending to an axial direction, the electrical conductor is comprised of a rectangular slot-in portion 18a located in the slots and a circular cross-over portion 18b connecting each of the slot-in portions at the shaft end side of the stator, wherein the conductor 18 is formed so that of-the slot-in portion 18a located in the slots is molded to substantially rectangular (in the press dies 102a, 102b of figure 14) in its cross-sectional profile before it is entered in the slots and the conductor of the cross-over portion 18b is substantially circular in its cross-sectional profile. Fujita teaches longer side portion of the conductor (radial side) of the slot-in portion located in the slots has an insulation coating of which thickness is smaller than that of insulation coating in the cross-over portion due to the insulating resin coating of embodiment 9 (figure 12). Fujita teaches the longer side being in the radial direction and shorter side in the circumferential direction in order to increase output by reducing the chances of magnet saturation. Fujita teaches the core 17 directly connected to the aluminum (paragraph 0103) housing 3 being endbrackets 1, 2 (see figure 1) protecting the cross over portions of the conductors. Fujita teaches the blades bending the incoming air at a right angle (see figure 1, as annotated and shown below). Fujita teaches every aspect of the invention except it does not teach the core being laminated or the conductor being a previously coated wire with the in-slot portion being substantially rectangular with the longer side having an insulation thickness smaller than the circular cross over portion and positioned in the slot with the long side in the radial direction without any air space, and

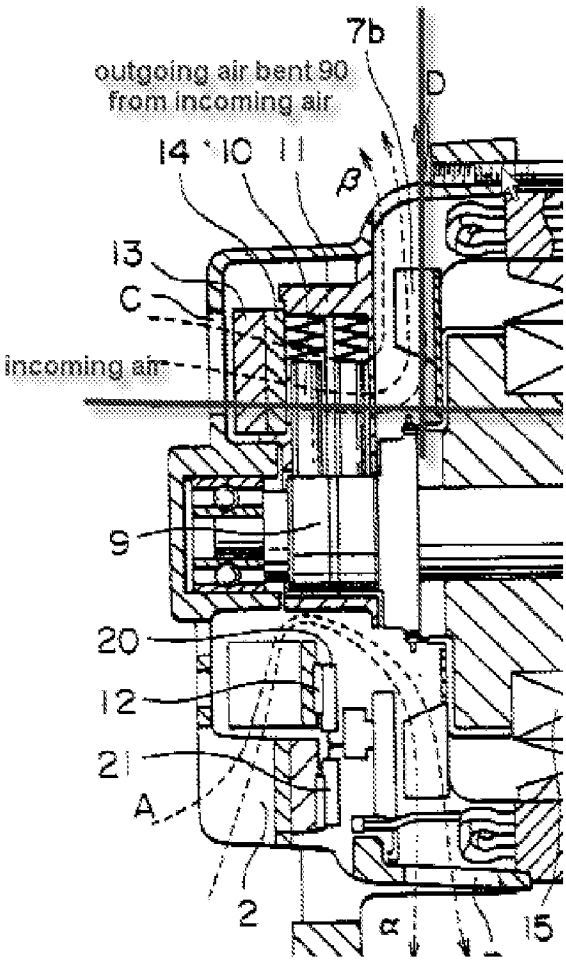
the periphery of the housing having ribs and air discharge holes or the charging air holes for longitudinal incoming air.



Fujita fig. 1

Oohashi teaches the core 11 being laminated for easy insertion of the winding 60 (paragraphs 0035-0036) with a rectangular cross section at the in slot portions 16 and circular cross over portions 17. Oohashi (embodiment 7) teaches the rectangular portions are molded by pressing in a jig to provide good space factor (paragraph 0008), the previously coated insulation 14 is compressed to be thinner than the round end sections (shown in figures 23A and 23B). Oohashi teaches the flat surfaces on the sides of being in close contact with the side walls of the slot to dissipate heat though the core (paragraph 0165). It would have been obvious to a person of ordinary skill in the art at the time of the invention to construct the alternator of Fujita with the stator core being laminated to provide easy assembly with a superior rate of production, as taught by Oohashi, and with the conductor being a previously coated wire with the in-slot portion being substantially rectangular with the longer side having an insulation

thickness smaller than the circular cross over portion to provide good space factor, as taught by Oohashi, and with flat sides being in contact without any air space to effectively dissipate heat through the stator core as taught by Ooashi.



Fujita figure 1.

In regards to the periphery of the housing having ribs and air discharge holes or the charging air holes for longitudinal incoming air; Oohashi ('205) teaches ribs 28 and exhaust holes 29 with longitudinal charging air holes (see figure 2),and with the air bent at right angles (see fig. 2) to provide cooling and improved power generation (col. 2, lines 60-65). It would be obvious for a person having ordinary skill in the art at the time

of the invention to construct the generator of Fujita and Oohashi with the periphery of the housing having ribs, air discharge holes, and charging air holes for longitudinal incoming air to provide cooling and enhanced power generation, as taught by Oohashi ('205).

Claim 4: Fujita et al. discloses a stator and conductor as in claim 1 above and further discloses that the slot-in portion is disposed on a line in the radial direction (Fig. 3).

Claim 15: Oohashi '205 discloses the plurality of fan blades draw the incoming air longitudinally from the charging air holes (see fig. 2) and exhaust the air through the discharging air holes 29. It would be obvious for a person having ordinary skill in the art at the time of the invention to construct the generator of Fujita and Oohashi with the periphery of the housing having ribs, air discharge holes, and charging air holes for longitudinal incoming air to provide cooling and enhanced power generation, as taught by Oohashi ('205).

2. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fujita et al. (Fujita)(US 2002/0043886) and Oohashi et al. (Oohashi)(US 2003/0015932) and Oohashi et al. (Oohashi '205)(US 6018205), in further in view of Asao et al. (Asao)(US 6281612). Fujita, Oohashi, and Oohashi teach every aspect of the invention except the conductor of the slot in portion located in slots closely disposed on a plurality of lines in the radial direction. Asao teaches the conductor of the slot in portion located in slots closely disposed on a plurality of lines in the radial direction to provide a slot factor in

the slot (Fig. 11). Asao teaches the slot in portion impregnated with resin to provide an integral structure with the core (col. 7, line 4). It would be obvious for a person having ordinary skill in the art at the time of the invention to construct the generator of Fujita, Oohashi, and Oohashi with the conductor of the slot in portion located in slots closely disposed on a plurality of lines in the radial direction to provide a slot factor in the slot, as taught by Asao.

3. Claim 6 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fujita et al. (Fujita)(US 2002/0043886) and Oohashi et al. (Oohashi)(US 2003/0015932) and Oohashi et al. (Oohashi '205)(US 6018205), in further in view of Oohashi et al.(Oohashi '958)(20020096958). Fujita and Oohashi and Oohashi teach every aspect of the invention, as discussed above, except the conductor of the in-slot portion impregnated with resin. Oohashi ('958) teaches the resin is applied to both the cross over portions and in side the slots (paragraphs 0023-0024) to reduce noise and vibration in the stator (paragraph 0003). Oohashi teaches resin in the slots and the cross over section. It would be obvious for a person having ordinary skill in the art at the time of the invention to construct the generator of Fujita and Oohashi and Oohashi with the conductor of the in-slot portion impregnated with resin to reduce vibration and noise in the stator, as taught by Oohashi ('958)

4. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fujita et al. (Fujita)(US 2002/0043886) and Oohashi et al. (Oohashi)(US 2003/0015932) and

Oohashi et al. (Oohashi '205)(US 6018205). Fujita and Oohashi and Oohashi teach every aspect of the invention, as discussed above, except the cross over portion having a diameter of 1.6mm and the in-slot portion has a thickness of 1.3 mm. Fujita teaches the diameter of the cross over section and the thickness of the rectangular section are result effective variables in determining the circular and rectangular cross sections providing inexpensive conductors (paragraph 0150). It would be obvious for a person having ordinary skill in the art at the time of the invention to construct the generator of Fujita and Oohashi and Oohashi with the cross over portion having a diameter of 1.6mm and the in-slot portion has a thickness of 1.3 mm to optimized the expense of the generator with the current carry capacity of the generator, as suggested by Fujita, and because it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. (see *In re Bosch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

5. Claim 14 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fujita et al. (Fujita)(US 2002/0043886) and Oohashi et al. (Oohashi)(US 2003/0015932) and Oohashi et al. (Oohashi '205)(US 6018205), in further in view of Yumiyama et al. (Yumiyama)(US 5587619). Fujita and Oohashi and Oohashi teach every aspect of the invention, as discussed above, except the thickness of the insulating coating on the cross over portion is 50 um and the thickness of the slot in portion is 40 um. Yumiyama teaches the thickess of the insulation is result effective to provide a high space factor in the slot with decreased magnetic resistance in the magnetic core (col. 2, line 49-62).

Yumiyama teaches the thickness of the insulating coating in the um range (48 um on the rounded surface and 30 on the flat surfaces). It would be obvious for a person having ordinary skill in the art at the time of the invention to construct the generator of Fujita and Oohashi and Oohashi with the thickness of the insulating coating on the cross over portion is 50 um and the thickness of the slot in portion is 40 um, because Yumiyama teaches the thickness of the insulating coating on the coated is flatten to provide a high space factor with the magnetic resistance in the core decreased for a small motor with high output; and because it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. (see *In re Bosch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

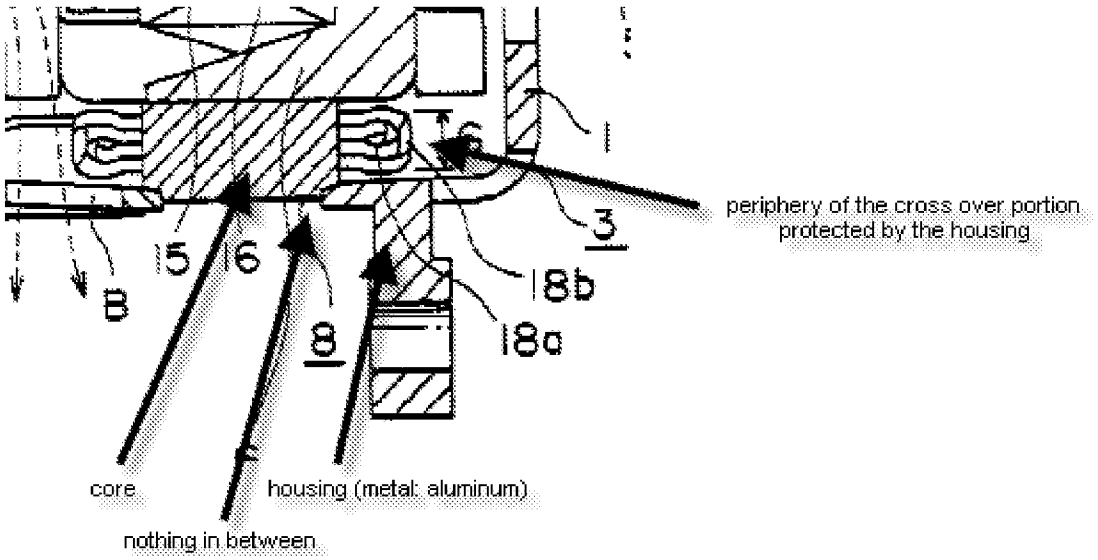
6. Claim 16 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fujita et al. (Fujita)(US 2002/0043886) and Oohashi et al. (Oohashi)(US 2003/0015932) and Oohashi et al. (Oohashi '205)(US 6018205), in further in view of Oohashi et al.(Oohashi '585)(US 6417585). Fujita and Oohashi and Oohashi teach every aspect of the invention, as discussed above, except the incoming air bent centrifugally. Oohashi ('585) teaches the incoming air bent centrifugally by ribs 35 to optimize power output and minimize wind noise (col. 4, lines 15-20). It would be obvious for a person having ordinary skill in the art at the time of the invention to construct the generator of Fujita and Oohashi and Oohashi with the incoming air bent centrifugally to optimize power output and minimize wind noise, as taught by Oohashi ('585).

(10) Response to Argument

Appellant's argument regarding the conductor being formed of previously coated insulated wire that are molded to be substantially rectangular in its cross-sectional profile before it is entered in the slots so that at least longer side portion of the conductor of the slot-in portion located in the slots has an insulation coating of which thickness is smaller than that of the insulation coating in the cross-over portion is not persuasive. Oohashi ('932) teaches windings with a substantially rectangular cross section at the in slot portions 16 and circular cross over portions 17 (see figures 11 and 12 for molding the rectangle in-slot portion). Oohashi (embodiment 4) teaches the rectangular portions are molded by pressing in a jig to provide good space factor (¶ 0008) and with a reduced cost (¶0120), the previously coated insulation 14 is compressed to be thinner (¶0029) in the in slot portion than the round end/cross over sections (shown in figures 23A and 23B), where the thinner insulation is on the longer side of the rectangular cross section placed in contact with the side of the slots for heat dissipation (¶0165, last two sentences). Oohashi teaches the flat surfaces on the sides of being in close contact with the side walls of the slot to dissipate heat though the core (¶ 0165). The motivation to utilize the windings of Oohashi is clear and literal to provide heat dissipation, high space factor, and reduced manufacturing costs.

Appellant's argument that Fujita does not teach a core held directly by the metal housing is not persuasive. Figure 1 of Fujita clearly shows the core 17 being held by the aluminum housing 1. The drawings can be used for what the reasonably show to a person of ordinary skill in the art, and limitation is clearly shown. When the reference is

a utility patent, it does not matter that the feature is unintended or unexplained in the specification. The drawings must be evaluated for what they reasonably disclose and suggest to one of ordinary skill in the art. *In re Aslanian*, 590 F.2d 9011, 200 UPSQ 500 (CCPA 1979) (see MPEP 2125). The drawing annotated below clearly show the core being directly mounted on the metal housing. Appellant's argument that the cross over portion are not protected by the housing is not persuasive, as it is clearly shown in figure 1 (annotated below).

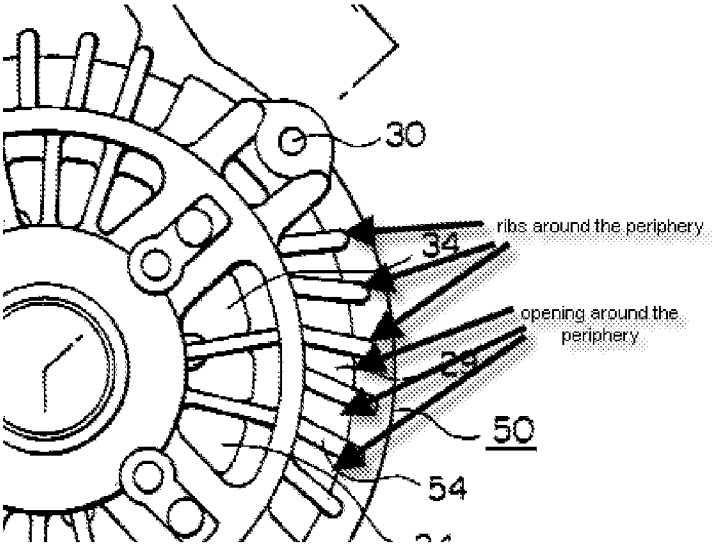


Appellant's argument regarding the core being laminated is not persuasive the alternator cores are typically laminated to reduce eddy current losses. Fujita merely refers to a "core", therefore the secondary reference of Oohashi ('932) was provide to show the core being laminated (see ¶0035-0036) for a superior rate of production.

Appellant's argument regarding conductor accumulated in the slot with the flat sides being in contact without any air space is not persuasive. Oohashi repeated

teaches the coils are in close contact with the side wall of the slot (¶'s 0023, 0029, 0089, 0095, 144, 165, 0194, 203) to dissipate heat into the core, therefore Oohashi provides LITERAL motivation for the conductors to contact the slots without air gaps, to maximize the heat transfer from the conductors to the stator core as taught by Oohashi. Appellant's argument that the lack of air gaps is merely speculative is not persuasive when it is based on the references themselves. Appellant's argument regarding the insulation being thinner on the longer side is not persuasive. Oohashi figure 23B clearly shows the longer side of the conductor having the thinner insulation, where the thinner insulation is in close contact with the stator slots to facilitate heat transfer.

Appellant's argument regarding the ribs and discharge holes is not persuasive. Fujita teaches openings B, D for passage of cooling air flows (See figure 1, and ¶ 0107). Typically there are several openings side by side such that there are ribs formed between the openings. Fujita does not show the side view of the motor housing 1, but it clearly teaches the discharge openings for cooling. Oohashi ('205) does teach the multiple openings 29 and ribs 54 (see figure 1) to suppress temperature increases and improve power generation capability. Appellant's argument regarding the periphery of the housing is not persuasive because the ribs and openings are at the periphery of the housing (see annotated figure 1, Oohashi '205).



Oohashi fig. 1, annotated

The rejection of claim 1 is proper and should be maintained.

Appellant's argument regard that Fujita does not teach the diameter of the cross over portion or the insulation of the in-slot portion having a thickness of 1.3 mm is not persuasive. Fujita teaches that the diameter of the cross over section and the thickness of the rectangular section are result effective variables in determining the circular and rectangular cross sections providing inexpensive conductors (¶ 0150). Fujita teaches the cross sectional area of the coil ends (diameter/round) is small to provide a reduced size for the entire alternator and reduced costs due to less material (see ¶ 0124, and figure 6). Fujita provides literal and clear motivation to a small diameter cross section on the cross over portion to reduce the size and the cost of the alternator. The thickness of the insulating coating being flattened is shown in Oohashi '932 where the mold/jig presses the insulation to be flat conductors to provide good heat conduction to the stator core (¶ 0029, 0165, and fig. 23B). Appellant's arguments regarding the result effective variables is not persuasive because the Fujita and Oohashi teach the small

cross section dimension for the conductor and insulation reduces the size and cost of the alternator, while providing effective cooling through the stator core.

Appellant's argument regarding the claims 5, 6, 10, 14, and 16 being allowable due to the dependency from claim 1 is not persuasive because claim 1 is not allowable as discussed above.

(11) Related Proceedings Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/Karl Tamai/

Karl Tamai

Primary Examiner, Art Unit 2834

Conferees at Patent Conference: 10/13/2010

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